

CLAIMS:

What is claimed is:

- 1 1. A method comprising:
2 identifying a communication capability of a remote device; and
3 dynamically generating a virtual channel within an Ethernet channel over a
4 communication link between a communication interface and the remote device, wherein a data
5 rate of the virtual channel is selected based, at least in part, on the identified communication
6 capability of the remote device.
- 1 2. A method according to claim 1, wherein the communication link is an 802.3ae compliant
2 communication link, with a data channel of 10Gb/s.
- 1 3. A method according to claim 1, wherein identifying a communication capability of the
2 remote device comprises:
3 sending a capability request; and
4 receiving a response to the request denoting at least the communications capability of the
5 remote device.
- 1 4. A method according to claim 1, wherein identifying a communication capability of the
2 remote device comprises:
3 receiving an indication from the remote device denoting at least the communications
4 capability of the remote device.

1 5. A method according to claim 4, wherein the indication also denotes a processing
2 capability of the remote device.

1 6. A method according to claim 1, wherein at least the communication capability of the
2 remote device is obtained by the communication interface through a negotiation process.

1 7. A method according to claim 1, wherein dynamically generating the virtual channel
2 within a physical Ethernet channel comprises establishing a sub-10Gb/s virtual data channel
3 within a physical 10Gb/s data channel based, at least in part, on the identified communication
4 capability of the remote device.

1 8. A method according to claim 7, further comprising:
2 identifying a processing capability of the remote device by the communication interface;
3 and
4 modifying a virtual channel data rate based, at least in part, on the identified processing
5 capability of the remote device.

1 9. A method according to claim 7, wherein establishing the virtual channel comprises:
2 parsing the physical channel into a plurality of timeslots based, at least in part, on the
3 identified communication capability of the remote device; and
4 assigning one or more of the plurality of generated timeslots to carry substantive content
5 as the virtual channel, while remaining timeslots do not carry substantive content.

1 10. A method according to claim 9, wherein substantive content is content associated with a
2 communication session between the communication interface and the remote device.

1 11. A method according to claim 9, wherein parsing the physical channel comprises:
2 determining a fraction of the physical channel required to support the virtual channel; and
3 timeslicing the physical channel into a number of timeslots, each timeslot corresponding
4 to the fraction.

1 12. A method according to claim 9, wherein parsing the physical channel comprises:
2 timeslicing the physical channel into a predetermined number of timeslots.

1 13. A method according to claim 9, wherein parsing the physical channel comprises:
2 timeslicing the physical channel into ten (10) timeslots, each associated with roughly a
3 1Gb/s communication rate.

1 14. A method according to claim 7, wherein establishing the virtual channel comprises:
2 selecting one or more 1Gb/s media access controller(s) (MAC) or a 10Gb/s MAC with
3 which to establish the virtual channel; and
4 dynamically multiplexing either the 1Gb/s MAC(s) or the 10Gb/s MAC to an appropriate
5 one or more channel(s) of an attachment unit interface (AUI).

1 15. A method according to claim 14, the attachment unit interface comprising:

at least four (4) 10Gb/s attachment unit interface (XAUI) channel(s), wherein content from up to two (2) 1Gb/s MAC(s) are selectively routed through each of the four XAUI channels such that each XAUI channel supports virtual channels of 1Gb/s resolution.

16. A storage medium comprising content which, when executed by an accessing computing appliance, causes the appliance to implement a scalable network interface to establish a virtual channel within a physical Ethernet channel based, at least in part, on at least an identified communication capability of a remote network element.

17. A storage medium according to claim 16, wherein the physical Ethernet channel is a 10Gb/s data channel, while the virtual channel is a sub-10Gb/s data channel, wherein a size of the virtual channel is selected to correspond with the identified communication capability of the remote network element.

18. A storage medium according to claim 16, the scalable network interface comprising negotiation feature(s) to identify one or more of a communication capability of a remote device and a processing capability of a remote device.

19. A storage medium according to claim 16, wherein the scalable network interface establishes a virtual channel by parsing the physical Ethernet channel into a number of timeslots, wherein the number is derived from the identified communication capability of the remote device.

1 20. A storage medium according to claim 16, wherein the scalable network interface
2 establishes a virtual channel by dynamically selecting between one or more 1Gb/s media access
3 controller(s) (MAC) or a 10Gb/s MAC, and dynamically routes content from the selected
4 MAC(s) through one or more attachment unit interface (AUI) channel(s), as appropriate.

1 21. An apparatus comprising:
2 control logic, to identify a communication capability of a remote device communicatively
3 coupled with the apparatus through a communication link; and
4 a media access controller (MAC), responsive to the control logic, to selectively parse the
5 physical data channel into a number of timeslots and populate only a subset of timeslots with
6 substantive data associated with a communication session with the remote device to create a
7 virtual channel within the physical channel when the identified communication capability of the
8 remote device is less than that of the physical channel.

1 22. An apparatus according to claim 21, wherein the control logic invokes auto-negotiation
2 feature(s) to identify at least the communication capability of the remote device.

1 23. An apparatus according to claim 21, wherein the number of timeslots is predetermined.

1 24. An apparatus according to claim 21, wherein the MAC derives the number of timeslots
2 required from the identified communication capability of the remote device.

1 25. An apparatus according to claim 21, wherein the MAC is a 10Gb/s MAC.

1 26. An apparatus comprising:
2 control logic, to identify a communication capability of a remote device communicatively
3 coupled with the apparatus through a communication link; and
4 a plurality of media access controller (MAC) types, responsive to the control logic,
5 switchably selected by the control logic to establish a 10Gb/s physical channel, or a sub-10Gb/s
6 virtual channel within the 10Gb/s physical channel to facilitate communication from the
7 apparatus to the remote device based, at least in part, on the identified communication capability
8 of the remote device.

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1 27. An apparatus according to claim 26, further comprising:
2 an attachment unit interface (AUI), switchably coupled with the MAC(s), the AUI having
3 four (4) 10Gb/s attachment unit interface (XAUI) channels, each channel supporting up to
4 2.5Gb/s communication rates which are aggregated to provide the 10Gb/s physical channel.

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1 28. An apparatus according to claim 27, wherein the plurality of MAC(s) include 1Gb/s
2 MAC(s), and wherein one or more 1Gb/s MAC(s) are dynamically selected to establish a sub-
3 10Gb/s virtual channel within the 10Gb/s physical channel.

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1 29. An apparatus according to claim 28, wherein up to two 1Gb/s MAC(s) are switchably
2 coupled to a XAUI channel, wherein when so switchably coupled each XAUI channel selectively
3 provides 1Gb/s virtual channel resolution within the 10Gb/s physical channel.

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